Research on Agricultural Product Trade Patterns, Structures and Comparative Advantages Between China and Countries Along Silk Road Economic Belt

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Abstract. The thesis studies the current status and structural changes of agricultural product trade in China and countries along “Silk Road Economic Belt”. It also analyzes the trade evolution traits based on comparative advantages and indexes analysis in apparent regions. Research demonstrates: trade scales of agricultural products in China and relevant countries constantly expands, the overall import volumes exceeds the export volumes, and the status of trade deficit has persisted for long periods. The 0th type of agricultural products are the primary, and the 2nd type of products are the secondary of China’s exports to relevant countries. Comparative advantages are significantly different in agricultural product trade, mainly concentrating in Asia-Europe economic belt. Therefore, China should continue to enhance comprehensive cooperation with countries along the “Silk Road Economic Belt”, stabilize the market of agricultural products in Asia-Europe economic belt, exploit the potential of agricultural product export trade in Central Asia economic belt, expand the market of agricultural products in Central Asia economic belt, and maintain sustainability of Chinese agricultural product export trade.

Introduction

The Silk Road originated from the grassland road, consisting of many disconnected and small-scale trades across continents of Europe and Asia in ancient times. Around the second century B.C., Emperor Wu of Western Han Dynasty sent Zhang Qian to the Western Region twice, facilitated trade activities and the rapid development of Silk Road. Based on the concept of silk road that connects the global trade, strategic idea of “Silk Road Economic Belt” appeared.

In September 2013, in order to develop regional balance and exploit new economic growth, President Xi Jinping proposed to jointly build up the “Silk Road Economic Belt”, in order to conduct international trade in new patterns of transnational cooperation. In December, National Development and Reform Commission and Ministry of Foreign Affairs conducted a symposium on promoting the establishment of Silk Road Economic Belt and Maritime Silk Road, and made relevant plans in different western provinces along Silk Road Economic Belt. In March 2015, the State Council also released complete files on the framework, principles and thoughts of construction. In this context, the thesis utilizes revealed comparative advantage indexes and adequate data to conduct research and studies on the current status and structural changes of agricultural product trade in China and countries along “Silk Road Economic Belt”, so as to provide scientific basis for enhancing and promoting the mutual cooperation between China and relevant countries along “Silk Road Economic Belt”.

Research Method, Research Scope and Data Sources

The thesis primarily conducts studies from perspectives of current status and structural changes of agricultural product trade, and utilizes the obvious comparative advantage indexes as the primary statistical indicators. The indexes were proposed by the American economist Balassa in 1965,
known as RCA index. It is also used to quantificationally describe the what industries are competitive within some countries compared with similar industries in other countries around the world. It can’t accurately indicate the comparative advantages in some specific markets. Hence, the thesis modifies obvious comparative advantage indexes to regional and revealed comparative advantage indexes. Besides, it also conducts comparative analysis based on regional and revealed export comparative advantage index(RRCA) and import comparative advantage index(RRTA). The specific formulas are stated as follows:

a) Regional and revealed export comparative advantage index(RRCA)

\[
RRCA_{mi} = \frac{X_{mi}X_{m}}{X_{mwi}X_{mw}}
\]

(1)

b) Regional and revealed import comparative advantage index (RRA)

\[
RRTA_{mi} = \frac{M_{mi}M_{m}}{M_{mwi}M_{mw}}
\]

(2)

In the listed formula: \(RRCA_{mi}\) and \(RRTA_{mi}\) represent the regional and revealed export comparative advantage index and regional and revealed import comparative advantage index of product i in the country m. \(X_{mi}\) and \(M_{mi}\) represent the export volumes and import volumes of product i in the country m. \(X_{m}\) and \(M_{m}\) represent the total export and import volume of the country m. \(X_{mwi}\) \(M_{mwi}\) represent the the total export and import volumes of product i in the 24 countries along “Silk Road Economic Belt”, excluding China. \(X_{mw}\) \(M_{mw}\) represent the total import and export volumes of the 24 countries. When the RRCA value is greater than 1, it shows that the export product of country m has comparative advantages. Greater values signify more obvious advantages. Otherwise, it doesn’t have comparative advantages. The same principle can be applied to obtain the RRTA value.

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![Figure 1. Statistics on Agricultural Export Trade Value between China and Countries along Silk Road.](image)

Fig. 1 shows that according to the overall agricultural trade volumes of China and relevant countries along “Silk Road Economic Belt”, from 1996 to 2016, agricultural product export in China and three major economic belts indicated the rising trend. But different economic belts had different range of growth. Agricultural product exports between China and Asia-Europe are the largest among the three economic belts, with the most significant rate of increase. Compared with agricultural product exports between China and Asia-Europe, although the annual volume of exports is different between China and Central Asia Economic Belt, the range of increase is basically the same. Agricultural product export trade volumes between China and countries in Central Asia Economic Belt are significantly lower than the other two economic belts. Moreover, over the past two decades, although annual export trade volume increased, the rate of increase was
Differences in agricultural product trade volumes between the other two economic belts also increased annually.

Fig. 2 shows that agricultural product import volume between China and Central Asia Economic Belt is the largest in the three major economic belt. But since 2011, the trade volume began to decline annually. Although agricultural product import volume between China and Asia-Europe Economic Belt is less than Central Asia Economic Belt, it constantly increased. In 2014, it surpassed the agricultural product import volume between China and Central Asia Economic Belt. Although agricultural product import and export volumes between China and Aisa-Europe Economic Belt are quite close on the whole. Although agricultural product import volume in countries along the Asia-Europe Economic Belt is less 1/10 of the other two economic belts.
According to the countries in Silk Road economic belt, China’s export to relevant countries indicated the feature of small scale and insignificant region in 2000. By 2015, with economic development, countries like Russia and the UK showed significant increase, becoming the main destinations for China’s agricultural product export. As for import, in 2000, Russia and the UK were also the main countries in China’s agricultural product export. In comparison, other regions were less apparent and small in scales. With the construction and expansion of Silk Road Economic Belt, in 2015, the number of import regions and import scales both increased, primarily due to the significant expansions in Russian and the UK, etc. The four figures demonstrate that over the 15 years, due to rapid construction and development of Silk Road Economic Belt, agricultural product trade volume between China and relevant countries constantly increased.

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From the perspective of revealed regional comparative advantages China’s agricultural export to Central Asia Economic Belt, it can be seen that only the 0\textsuperscript{th} type of agricultural products is always greater 1, so it has obvious comparative advantages. Moreover, in the recent ten years, the overall trend of RRCA indexes was basically stable. Although RRCA index of the 1\textsuperscript{st} type of agricultural products reached 2.54 in 2000, it declined to the point of 0.07 in 2015, with the least comparative advantages in the four types of agricultural products. The other two types also indicated comparative disadvantages in RRCA indexes. The overall development of Central Asia Economic Belt was relatively backward.

From the perspective of China’s import, the RRTA for the 2\textsuperscript{nd} type of agricultural products reached 1.86, which was even higher than RRCA index for the 0\textsuperscript{th} type of agricultural products. But the RRCA index for the 2\textsuperscript{nd} type of agricultural products was only 0.18. It demonstrates that China is significantly dependent on Central Asia Economic Belt for importing the 2\textsuperscript{nd} type of agricultural products.

From the perspective of China’s export, the 2\textsuperscript{nd} type of agricultural products also involved comparative advantages, indicating large export volume in the 2\textsuperscript{nd} type of agricultural products. But it was also highly dependent on the ring of Central Asia Economic Belt, and even reduced the
advantages for the 2nd type of agricultural products in Central Asia Economic Belt. The RRTA index for the 1st type of agricultural products was only 0.04. In a manner of speaking, it didn’t contain comparative advantages. To some extent, it posed impacts on the balance of domestic supply and demand and reduced efficiency of domestic resource allocation.

Conclusion and Enlightenment

Firstly, since China’s entry into the WTO in 2001, the overall agricultural product import volume has exceeded the export value. Trade deficit has lasted for a long period. It indicates that China has highly relied on foreign import of agricultural products, which is not conducive for the agricultural development. The primary reasons include relevant factors in production technology, population and labor force, labour intensive products with low additional values as the main exported agricultural products. The competitive advantages are not significant in the ring of Central Asia Economic Belt and Aisa-Europe Economic Belt. For countries along ring of Central Asia Economic Belt and Aisa-Europe Economic Belt, especially for developed countries like Britain, Germany, France and Russia, their developed and advanced economic and scientific technologies, as well as smaller populations are favorable condition for agricultural automation and mechanization. Moreover, commercial crops are primarily grown in countries like Russia and Germany. Compared with food crops in China, they can produce more economic benefits. Besides, issues like non-tariff barriers in agricultural product exports are also important reasons for import and export trade differences.

Secondly, as for agricultural product import and export trade between China and countries along “Sill Road Economic Belt”, the 0th type of products are primarily exported, and the 2nd type of products are in the secondary status. The 1st and 4th types of agricultural products account for low ratios. For agricultural product imported from countries along “Sill Road Economic Belt”, the 2nd type of products are in the primary status, the 0th and 1st types of products come in the secondary position, and the 4th type of agricultural product import accounts for low ratios.

Thirdly, regional revealed comparative advantage indexes can effectively demonstrate that during the sample period, China had different advantageous agricultural product in different economic belt. For agricultural product import and export trade between China and countries along “Sill Road Economic Belt”, they mainly concentrate on the Asia-Europe Economic Belt with close connections. It indicates that higher economic openness also ensure more comparative advantages of China’s agricultural product export. Although the agricultural product trade connection between Central Asia Economic Belt and the ring of Central Asia Economic Belt is not as close as Asia-Europe Economic Belt, it still gradually increased in some types of agricultural products.

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